PHYSICS

BOOKS - NEET PREVIOUS YEAR (YEARWISE + CHAPTERWISE)

NEET 2021

Question

1. A series LCR circuit containing 5.0 H inductor, $80\mu F$ capacitor and 40Ω resistor is

connected to 230 V variable frequency ac source. The angular frequencies of the source at which power transfered to circuit is half the power at resonant angular frequency are likely to be.

A. 46 rad/s and 54 rad/s

B. 42 rad/s and 58 rad/s

C. 25 rad/s and 75 rad/s

D. 50 rad/s and 25 rad/s

Answer:

Watch Video Solution

2. A uniform conducting wire of length 12a and resistance 'R' is wound up as a current carrying coil in the shape of

1. an equilateral triangle of side 'a'

2. a square of side 'a'

The magnetic dipole moments of the coil in each case resp. are.

A. $3Ia^2$ and $4Ia^2$

B. $4Ia^2$ and $3Ia^2$

C. $\sqrt{3}Ia^2$ and $3Ia^2$

D. $3Ia^2$ and Ia^2

Answer:

Watch Video Solution

3. A ball of mass 0.15kg is dropped from a height 10m strikes the ground and rebounds to the same height. The magnitude of impulse imparted to the ball is ($g = 10\frac{m}{s^2}$) nearly:

A. 2.1 kg m/s

B. 1.4 kg m/s

C. 0 kg m/s

D. 4.2 kg m/s

Answer: D

Watch Video Solution

4. A step down transformer connected to an ac mains supply of 220V is made to operate at 11V, 44W lamp. Ignoring power losses in the

transformer what is the current in primary circuit.

A. 2A

B. 4A

C. 0.2A

D. 0.4A

Answer:

Watch Video Solution

5. From a circular ring of mass M and radius R, an arc corresponding to a 90° sector is removed. The moment of inertia of the remaining part of the ring about an axis passing through the centre of the ring and perpendicular to the plane of the ring is k times MR^2. Then the value of k is

A. $\frac{1}{4}$

B. $\frac{1}{8}$

C. $\frac{3}{4}$

D. $\frac{7}{8}$

Answer:

 Watch Video Solution

6. A particle moving in a circle of radius R with a uniform speed takes a time T to complete one revolution. If this particle were projected with the same speed at an angle θ to the horizontal, the maximum height attained by it

equals 4R. The angle of projection θ is then given by

A. $\theta = \sin^{-1}\left(\frac{\pi^2 R}{gT^2}\right)^{\frac{1}{2}}$

B. $\theta = \sin^{-1}\left(\frac{2gT^2}{\pi^2 R}\right)^{\frac{1}{2}}$

C. $\theta = \cos^{-1}\left(\frac{2gT^2}{\pi^2 R}\right)^{\frac{1}{2}}$

D. $\theta = \cos^{-1}\left(\frac{\pi^2 R}{gT^2}\right)^{\frac{1}{2}}$

Answer:

Watch Video Solution

7. Twenty seven drops of same size are charged at 220V each. They combine to form a bigger drop. Calculate the potential of the bigger drop.

A. 4520 V

B. 1980 V

C. 660 V

D. 1320 V

Answer:

Watch Video Solution

Watch Video Solution

8. A particle of mass 'm' is projected with a velocity $v = kV_e(k < 1)$ from the surface of the earth.(Ve = escape velocity)The maximum height above the surface reached by the particle is:

A. $\frac{R^2k}{1+k}$

B. $\frac{Rk^2}{1-k^2}$

C. $R\left(\frac{k}{1-k}\right)^2$

D. $R\left(\frac{k}{1+k}\right)^2$

Answer:

Watch Video Solution

9. A car starts from rest and accelerates at $5\frac{m}{s^2}$. At t = 4s, a ball is dropped out of a window by a person sitting in the car. What is the velocity and acceleration of the ball at t = 6s?

A. $20\sqrt{2}\frac{m}{s}, 0$

B. $20\sqrt{2}\frac{m}{s}, 10\frac{m}{s^2}$

C. $20\sqrt{2}\frac{m}{s}, 5\frac{m}{s^2}$

D. $20\frac{m}{s}, 0$

Answer:

Watch Video Solution

10. Two conducting circular loops of radii R_1 and R_2 are placed in the same plane with their centres coinciding. If $R_1 >> R_2$ the mutual inductance M between them will be directly proportional to

A. $\frac{(R_1)^2}{R_2}$

B. $\frac{(R_2)^2}{R_1}$

C. $\frac{R_1}{R_2}$

D. $\frac{R_2}{R_1}$

Answer:

Watch Video Solution

11. A radioactive nucleus X undergoes spontaneous decay in the sequence

z X to z-1 B to z-3 C to z-2 D, where Z is the atomic number of element Z. The possible decay particles in the sequence are:

A. β^+, α, β^-

B. β^-, α, β^+

C. α, β^-, β^+

D. α, β^+, β^-

Answer:

Watch Video Solution

12. In a potentiometer circuit a cell of EMF 1.5V gives balance point at 36 cm length of wire. If another cell of EMF 2.5V replaces the first cell., then at what length of the wire, the balance point occurs?

A. 64 cm

B. 62 cm

C. 60 cm

D. 21.6 cm

Answer:

Watch Video Solution

13. A small block slides without friction down an iclined plane starting form rest. Let S_n be the distance traveled from time $t = n - 1$ to $t = n$. Then $\frac{S_n}{S_{n+1}}$ is:

A. $\frac{2n+1}{2n-1}$

B. $\frac{2n}{2n-1}$

C. $\frac{2n-1}{2n}$

D. $\frac{2n-1}{2n+1}$

Answer:

Watch Video Solution

14. Consider the following statements A and B and identify the correct answer

(A) A Zener diode is always connected in reverse bias to use it as voltage regulator.

(B) The potential barrier of a $p-n$ junction lies between 0.1 to $0.3V$, approximately.

A. A is correct and B is incorrect

B. A is incorrect and B is correct

C. (A) and (B) both are correct

D. (A) and (B) both are incorrect

Answer:

Watch Video Solution

15. The electron concentration in an n-type semiconductor is the same as hole concentration in a p-type semiconductor. An

external field is applied across each of them. Compare the currents in them.

A. current in n-type gt current in p-type

B. no current will flow in p-type, current will only flow in n-type

C. current in n-type = current in p-type

D. current in p-type gt current in n-type

Answer:

 Watch Video Solution

16. A capacitor of capacitance C is connected across an ac source of volatge V given by, $V = V_0 \sin(wt)$. The displacement current between the plates of the capacitor would then be given by

A. $I_d = \dfrac{V_0 \sin(wt)}{wC}$

B. $I_d = (V_0 wC \sin(wt))$

C. $I_d = (V_0 wC \cos(wt))$

D. $I_d = \dfrac{V_0 \cos(wt)}{wC}$

Answer:

Watch Video Solution

17. A particle is released from height S from the surface of the earth. At a certain height its KE is three times its PE. The height from the surface of earth and the speed of the particle at that instant are resp.

A. $\frac{S}{2}, \frac{\sqrt{3gS}}{2}$

B. $\frac{S}{4}, \sqrt{\frac{3gS}{2}}$

C. $\frac{S}{4}, \frac{3gS}{2}$

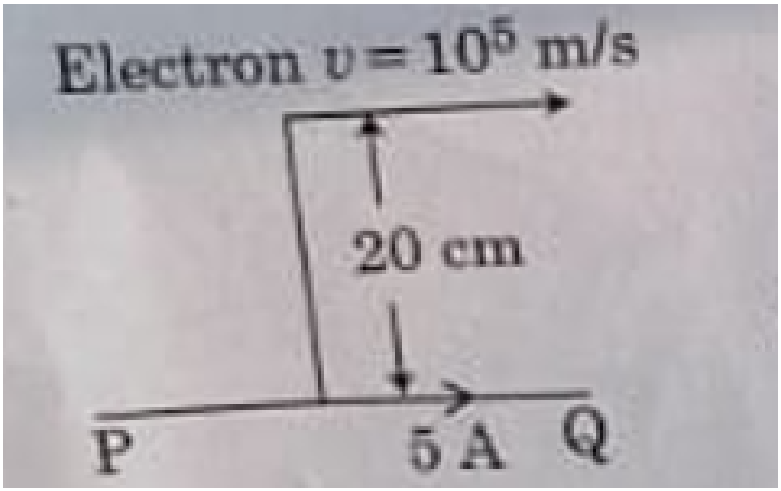
D. $\frac{S}{4}, \frac{\sqrt{3gS}}{2}$

Answer:

Watch Video Solution

18. An infinitely long straight consuctor carries a current of 5A as shown. An electron is moving with a speed of $10^5 \frac{m}{s}$ parallel to the conductor. The perpendicular distance between the electron and the conductor is 20cm at an instant. Calculate the magnitude

of the force experienced by the electron at that instant.



A. $4\pi x10^{-20}N$

B. $8x10^{-20}N$

C. $4x10^{-20}N$

D. $8\pi x10^{-20}N$

Answer:

 Watch Video Solution

19. A screw gauge gives the following readings when used to measure the diameter of a wire.

Main Scale Reading: 0mm

Circular scale reading: 52 divisions

Given that 1mm on main scale corresponds to 100 divisons on the circular scale. The diameter of the wire from the above data is

A. 6.26 cm

B. 0.052 cm

C. 0.52 cm

D. 0.026 cm

Answer:

Watch Video Solution

20. If force [F] acceleration [A] time [T] are chosen as the fundamental physical quantities. Find the dimensions of energy.

A. $[F][A]\left[T^{-1}\right]$

B. $[F]\left[A^{-1}\right][T]$

C. $[F][A][T]$

D. $[F][A]\left[T^{2}\right]$

Answer:

Watch Video Solution

21. A lens of large focal length and large aperture is best suited as an objective of an astronomical telescope since:

A. a large aperture contributes to the quality and visiblity of the images.

B. a large area of the objective ensures better light gathering power

C. a large aperture provides a better resolution

D. all of the above

Answer: D

Watch Video Solution

22. An EM wave of waalength λ is incident on a photosensitive surface of negligible work function. If m mass is of photo electron emitted from the surface has de-broglie wavelength λ_d then,

A. $\lambda = \dfrac{2mc(\lambda_d)^2}{h}$

B. $\lambda = \dfrac{2h(\lambda_d)^2}{mc}$

C. $\lambda = \dfrac{2m(\lambda_d)^2}{hc}$

D. $\lambda_d = \dfrac{2mc\lambda^2}{h}$

Answer:

Watch Video Solution

23. Two charged spherical conductors of radius R_1 and R_2 are connected by a wire. Then the ratio of surface charge densities of the spheres $\frac{\sigma_1}{\sigma_2}$ is

A. $\sqrt{\frac{R_1}{R_2}}$

B. $\frac{R_1^2}{R_2^2}$

C. $\frac{R_1}{R_2}$

D. $\frac{R_2}{R_1}$

Answer:

Watch Video Solution

24. A nucleus with mass number 240 breaks into two fragments each of mass number 120, the binding energy per nucleon of unfragmented nuclei is 7.6 MeV while that of fragments is 8.5 MeV. The total gain in the binding energy in the process is:

A. 804 MeV

B. 216 MeV

C. 0.9 MeV

D. 9.4 MeV

Answer:

Watch Video Solution

25. Water falls from a height of 60m at the rate of 15 kg/s to operate a turbine. The losses due to frictional force are 10% of the input

energy. How much power is generated by the turbine?

A. 12.3 kW

B. 7.0 kW

C. 10.2 kW

D. 8.1 kW

Answer:

Watch Video Solution

26. If E and G resp. denote energy and gravitational constant then E/G has the dimensions of

A. $[M][L^0][T^0]$

B. $[M^2][L^{-2}][T^{-1}]$

C. $[M^2][L^{-1}][T^0]$

D. $[M][L^{-1}][T^{-1}]$

Answer:

Watch Video Solution

27. The effective resistance of a parallel connection that consists of four wires of equal length equal area of cross section and same material is 0.25 omega. What will be the effective resistance if they are connected in series?

A. 1Ω

B. 4Ω

C. 0.25Ω

D. 0.5Ω

Answer:

Watch Video Solution

28. The half life of a radioactive nuclide is 100 hours. The fraction of original activity that will remain after 150 hours would be:

A. $\frac{2}{3}$

B. $\frac{2}{3\sqrt{2}}$

C. $\frac{1}{2}$

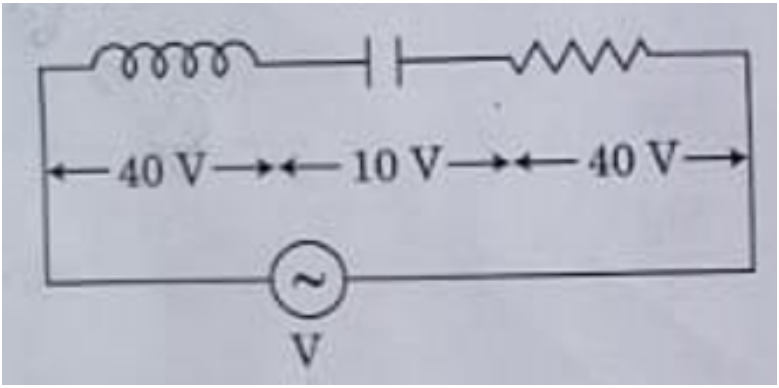
D. $\frac{1}{2\sqrt{2}}$

Answer:

Watch Video Solution

29. An inductor of inductance L, a capacitor of capacitance C and a resistor of resistance 'R' are connected in series to an ac source of potential difference 'V' volts as shown in figure. Potential difference across L, C, R is 40V, 10 V, 40 V resp. The amplitude of current flowing through LCR series circuit is $10\sqrt{2}$ A.

The impedance of the circuit is:



A. 4Ω

B. 5Ω

C. $4\sqrt{2}\Omega$

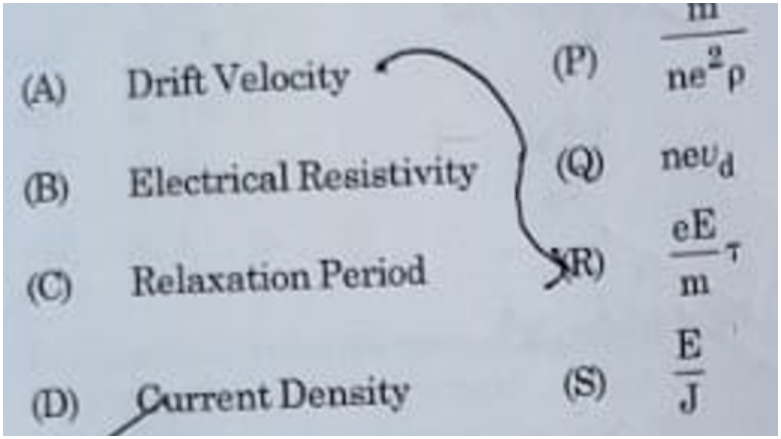
D. $5\sqrt{2}\Omega$

Answer:

Watch Video Solution

30. Column I- gives certain physical terms associated with flow of current through a metallic conductor

Column II- gives some mathematical relations involving electrical quantities. Match column I and column II with appropriate relations.



A. (A)-(R), (B)-(P), (C)-(S), (D)-(Q)

B. (A)-(R), (B)-(Q), (C)-(S), (D)-(P)

C. (A)-(R), (B)-(S), (C)-(P), (D)-(Q)

D. (A)-(R), (B)-(S), (C)-(Q), (D)-(P)

Answer:

Watch Video Solution

31. Polar molecules are the molecules:

A. acquire a dipole moment only when magnetic field is absent

B. having a permanent electric dipole moment

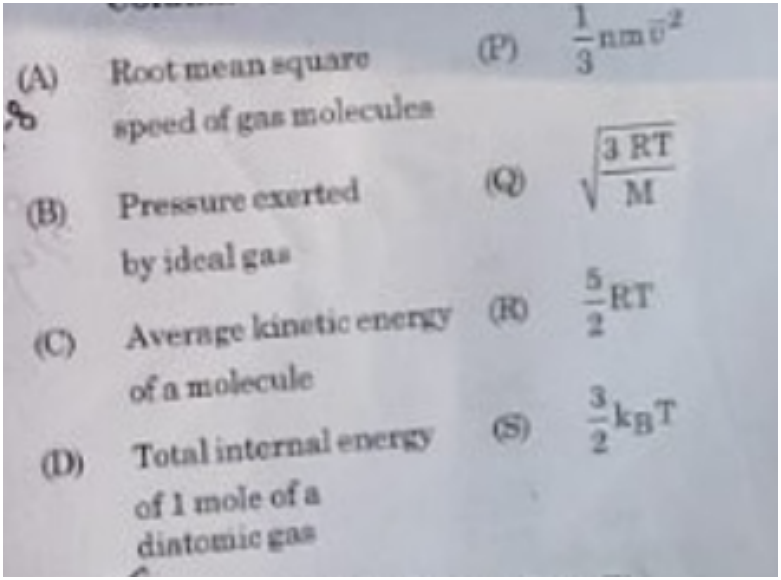
C. having zero dipole moment

D. acquire a dipole moment only in the presence of electric field due to displacement of charges

Answer: B

 Watch Video Solution

32. Match column 1 and column 2 and choose correct match from the given choices.



A. (A)-(Q),(B)-(P),(C)-(S),(D)-(R)

B. (A)-(R),(B)-(Q),(C)-(P),(D)-(S)

C. (A)-(R),(B)-(P),(C)-(S),(D)-(Q)

D. (A)-(Q),(B)-(R),(C)-(S),(D)-(P)

Answer:

Watch Video Solution

33. A convex lens A of focal length 20cm and a concave lens G of focal length 5cm are kept along the same axis with the distance d between them. If a parallel beam of light

falling on A leaves B as a parallel beam, then distance d in cm will be

A. 50

B. 80

C. 25

D. 15

Answer: D

Watch Video Solution

34. A cup of coffee cools from 90^0C to 80^0C in t minutes when the room temperature is 20^0C. The time taken by a similar cup of coffee to cool from 80^0C to 60^0C at a room temperature same at 20^0C is

A. $\frac{10t}{13}$

B. $\frac{5t}{13}$

C. $\frac{13t}{10}$

D. $\frac{13t}{5}$

Answer:

Watch Video Solution

35. The escape velocity from the earth's surface is v. The escape velocity from the surface of another planet having a radius, four times that of earth and same mass density is

A. 3v

B. 4v

C. v

D. 2v

Answer:

Watch Video Solution

36. A body is executing simple harmonic motion with frequency 'n' the frequency of its potential energy is

A. 3n

B. 4n

C. n

D. 2n

Answer: D

Watch Video Solution

37. The number of photons per second on an average emitted by the souce of monochromatic light of wavelength 600 nm when it delivers the power ofd 3.3 x 10^-3` watt will be

A. 10^{16}

B. 10^{15}

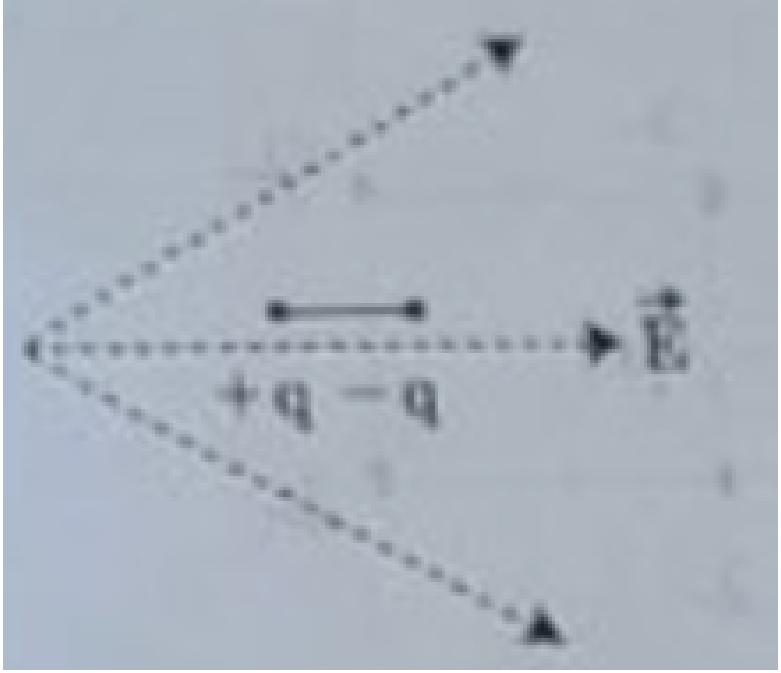
C. 10^{18}

D. 10^{17}

Answer:

Watch Video Solution

38. A dipole is placed in an electric field as shown. In which directions will it move?



A. towards the left as its PE will decrease

B. towards the right as its PE will increase

C. towards the left as its PE will increase

D. towards the right as its PE will decrease

Answer:

Watch Video Solution

39. For a plane EM wave propagating in x-direction which one of the following combination gives the correct possible direction for electric field E and magnetic field B resp.?

A. $\hat{j}+\hat{k},\ -\hat{j}-\hat{k}$

B. $-\hat{j}+\hat{k},\ -\hat{j}+\hat{k}$

C. $\hat{j}+\hat{k}, \hat{j}+\hat{k}$

D. $-\hat{j}+\hat{k}, \ -\hat{j}-\hat{k}$

Answer:

Watch Video Solution

40. The velocity of a small ball of mass M and density d when dropped in a container filled with glycerine becomes constant after sometime. If the density of glycerine is 'd/2' then the viscous force acting on the ball will be

A. $\frac{3}{2}Mg$

B. $2Mg$

C. $M\frac{g}{2}$

D. Mg

Answer:

Watch Video Solution

41. A parallel plate capacitor has a uniform electric field $\overrightarrow{E}$ in the space between the plates. If the distance between the plates is 'd'

and the area of each plate is 'A' the energy stored in the capacitor is

A. $\frac{\varepsilon_0 E^2 Ad}{2}$

B. $\frac{E^2 Ad}{\varepsilon_0}$

C. $\frac{\varepsilon_0 E^2}{2}$

D. $(\varepsilon_0 EAd)$

Answer:

Watch Video Solution

42. A spring is stretched by 5cm by a force 10N. The time period of the oscillations when a mass of 2Kg is suspended by it is

A. 3.14s

B. 0.628s

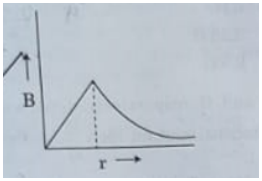
C. 0.0628s

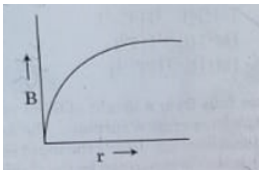
D. 6.28s

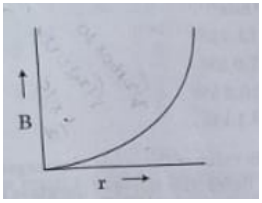
Answer:

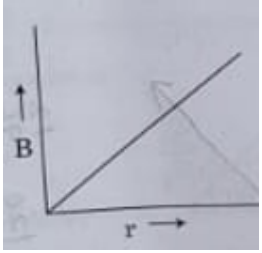
Watch Video Solution

43. A thick current carrying cable of radius 'R' carries current 'I' uniformly distributed across its crosssection. The variation of magnetic field B(r) due to cable with distance 'r' from the axis of the cable is represented by.

A. 

B. 

C. 

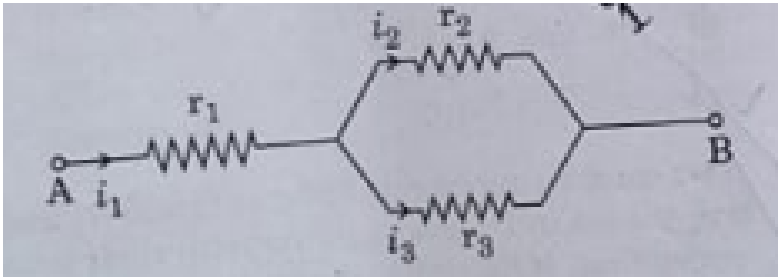
D. 

Answer:

Watch Video Solution

44. Three resistors having resistance r_1, r_2, r_3 are connected as shown. The ratio $\frac{i_3}{i_1}$ of

current in terms of resistance used in circuit is



A. $\frac{r_1}{r_1 + r_2}$

B. $\frac{r_2}{r_1 + r_3}$

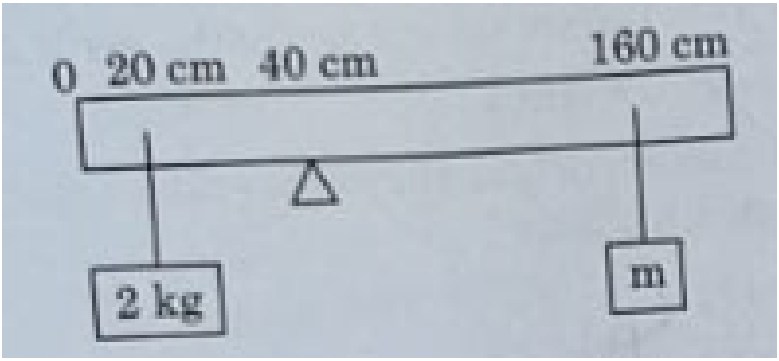
C. $\frac{r_1}{r_2 + r_3}$

D. $\frac{r_2}{r_2 + r_3}$

Answer:

Watch Video Solution

45. A uniform rod of length 200cm and mass 500g is balanced on a wedge placed at 40 cm mark. A mass of 2Kg is suspended from the rod at 20cm and another unknown mass m is suspended from the rod at 160cm mark as shown in figure. Find value of m such that the rod is in equilibrium.



A. $\frac{1}{6}kg$

B. $\frac{1}{12}kg$

C. $\frac{1}{2}kg$

D. $\frac{1}{3}kg$

Answer: B

Watch Video Solution

46. In the product

$$\vec{F} = q\left(\vec{v} \times \vec{B}\right) = q\vec{v} \times \left(B\hat{i} + B\hat{j} + B_0\hat{k}\right)$$

For q = 1 and $\vec{v} = 2\hat{i} + 4\hat{j} + 6\hat{k}$ and

$\overrightarrow{F} = 4\hat{i} - 20\hat{j} + 12\hat{k}$. What will be the complete expression for $\overrightarrow{B}$?

A. $8\hat{i} + 8\hat{j} - 6\hat{k}$

B. $-6\hat{i} - 6\hat{j} - 8\hat{k}$

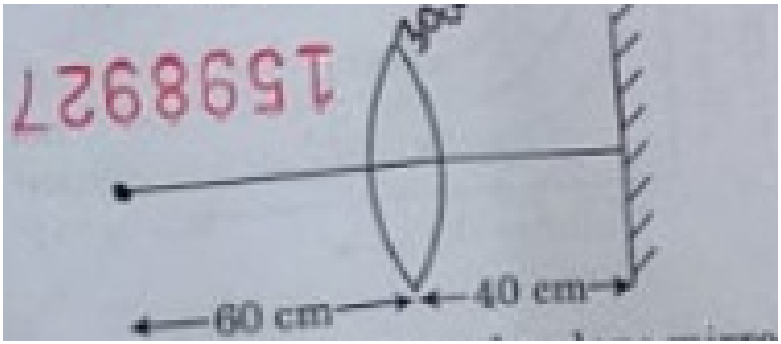
C. $-8\hat{i} + 8\hat{j} - 6\hat{k}$

D. $6\hat{i} - 6\hat{j} - 8\hat{k}$

Answer:

Watch Video Solution

47. A point object is placed at distance 60cm from a convex lens of focal length 30 cm. If a plane mirror were put perpendicular to principal axis of lens and at distance 40cm from it the final image would be formed at distance of:



A. 30cm from plane mirror it would be a virtual image

B. 20cm from plane mirror it would be a virtual image

C. 20cm from lens it would be a real image

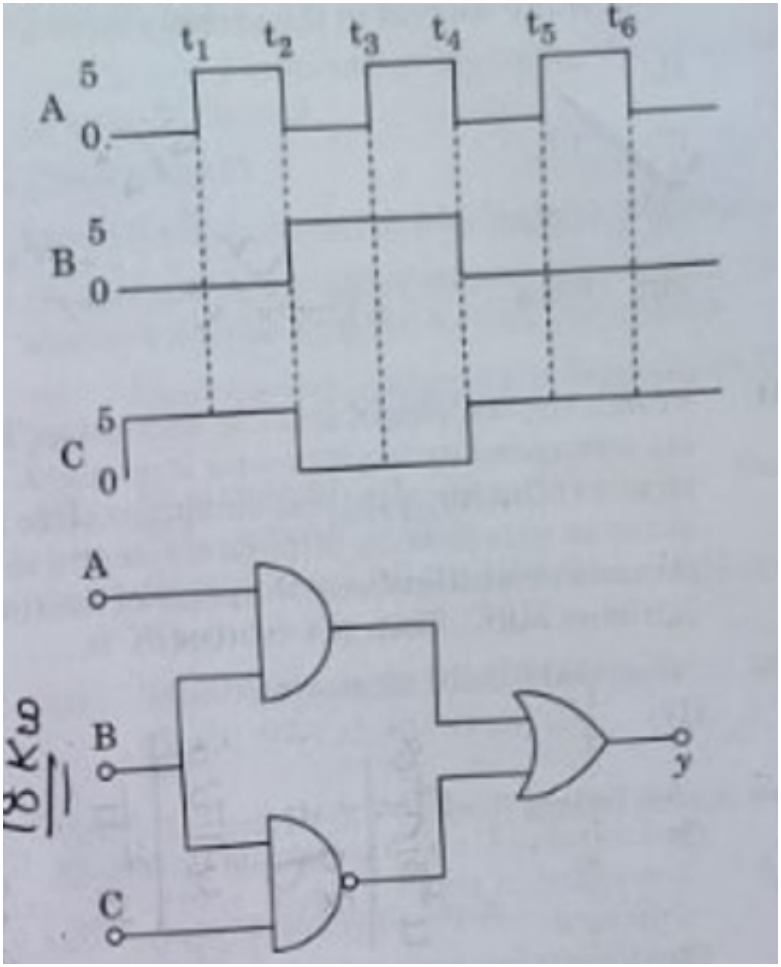
D. 30cm from lens it would be a real image

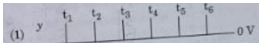
Answer: C

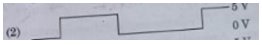
Watch Video Solution

48. For given circuit the input digital signals are applied at terminal A,B, C. What would be

output at terminals?



A. 

B. 

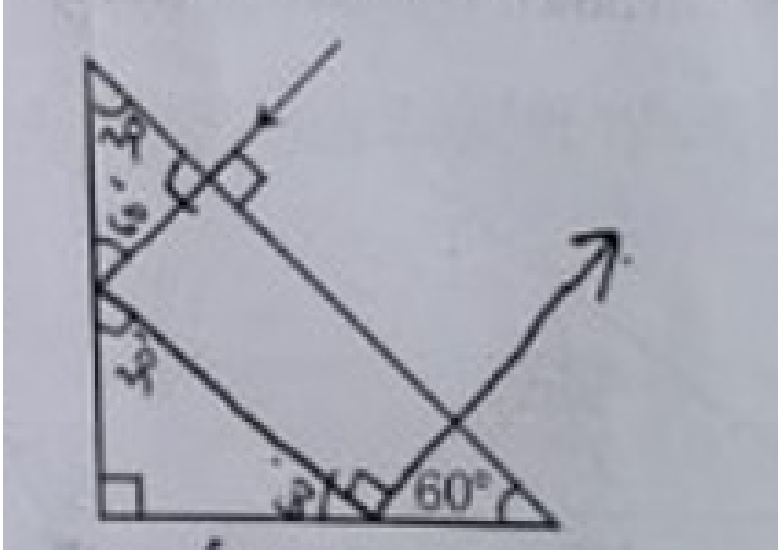
C. 

D. 

Answer:

Watch Video Solution

49. Find the value of angle of emergence from the prism. Refractive index of the glass $\sqrt{3}$



A. 45

B. 90

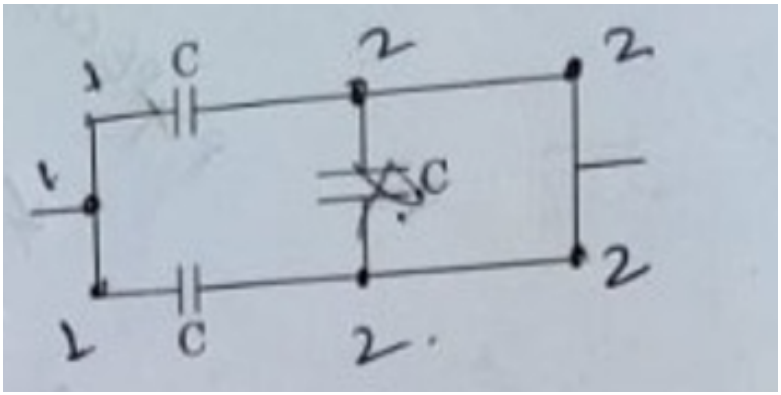
C. 60

D. 30

Answer: B

Watch Video Solution

50. The equivalent capacitance of combination shown in figure is



A. $\frac{C}{2}$

B. $3\frac{C}{2}$

C. $3C$

D. $2C$

Answer:

 Watch Video Solution